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ABSTRACT OF THE DISCLOSURE

The present invention controls the state electronic energy and generation of radical species by controlling the electron energy state using electromagnetic wave radiated into plasma and magnetic field, and by controlling each state of capacitatively coupled discharge, inductively coupled discharge and electronic cyclotron resonant discharge. The present invention further controls radiated electromagnetic wave power distribution through displacement current control, and controls uniformity in plasma processing through plasma distribution control. Still further, it controls the density distribution of radio frequency current flowing through the substrate, thereby preventing changes in characteristics of semiconductor devices.